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# Who Benefits From 'Precision Agriculture' — Farmers and Consumers? Or Big Ag?

*Federal lawmakers may soon launch a new grant program to expand internet-connected "precision agriculture" methods on U.S. farms — but some critics of the technology say the taxpayer money should go to supporting regenerative agriculture.*

**By Suzanne Burdick, Ph.D.**

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Federal lawmakers may soon launch a new grant program to expand internet-connected "precision agriculture" methods on U.S. farms — but some critics of the technology say the taxpayer money should go to supporting regenerative agriculture.

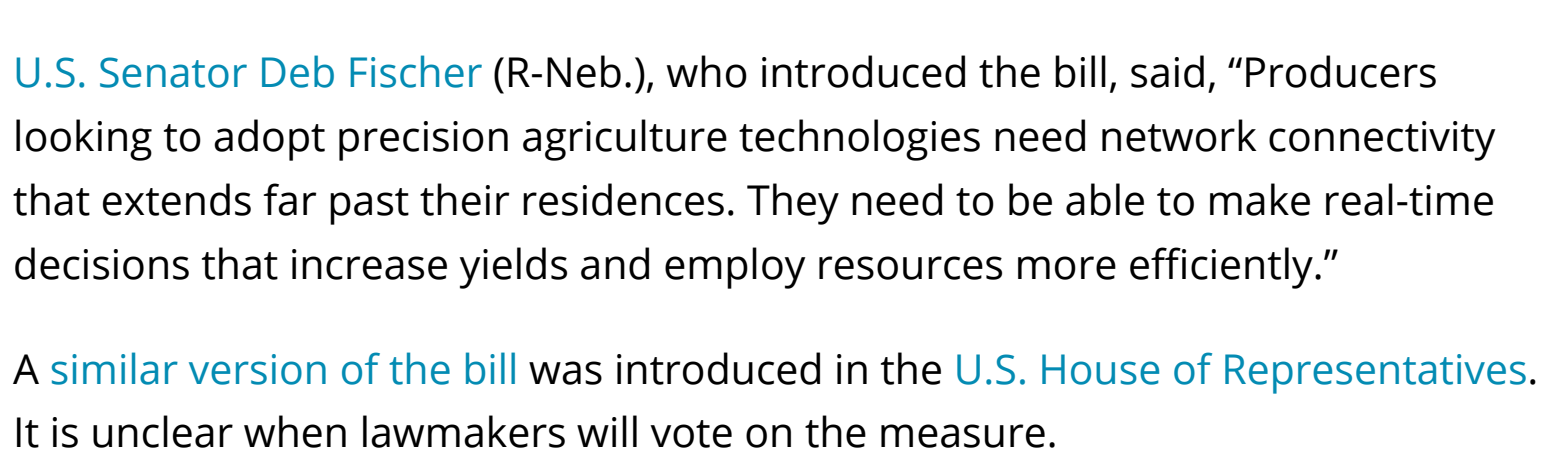
The "Linking Access to Spur Technology for Agriculture Connectivity in Rural Environments Act of 2023" — or "LAST ACRE Act" — would create a new U.S. Department of Agriculture (USDA) Rural Development grant program for bringing broadband internet to farms "to advance precision agriculture connectivity nationwide."

Precision agriculture is "an overarching term for a variety of farming management strategies and technologies that aim to address the spatial and temporal variability of the field and promote farming efficiency."

Precision agriculture technologies include the use of Internet of Things (IoT) devices in fields, such as GPS sensors and geographic information systems, or GIS, for data collection and digital cameras for monitoring crops and soil.

U.S. Senator Deb Fischer (R-Neb.), who introduced the bill, said, "Producers looking to adopt precision agriculture technologies need network connectivity that extends far past their residences. They need to be able to make real-time decisions that increase yields and employ resources more efficiently."

A similar version of the bill was introduced in the U.S. House of Representatives. It is unclear when lawmakers will vote on the measure.



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**'Just a further expansion of industrial agribusiness cartels'**

Organic farming experts — including Vandana Shiva, Ph.D., and André Leu — told The Defender that precision agriculture methods only expand industrial agriculture's harm to the planet and farmers.

Shiva, a food sovereignty and environmental activist who has written more than 20 books, said agriculture is a "living process" involving human interaction with living organisms and complex living systems.

"'Precision' works in using weapons against a target. It is an inappropriate approach to living systems," she said. "What is needed is harmony, balance and respect for life."

Leu, author of "The Myths of Safe Pesticides," said precision agriculture means increased financial "shackling" of farmers and is "just a further expansion by the industrial agribusiness cartels to trap farmers into more debt."

Corporations selling precision agriculture products may make promises of increased yields and efficiency, but the reality is often higher production costs for farmers, according to Leu.

"Most independent published science shows no significant yield increases," Leu said. "The corporate studies are riddled with conflicts of interest and are mostly of poor quality. They are sales pitches for industrial agriculture."

Joel Salatin, lecturer and owner of Polyface Farm, told The Defender there's no doubt farmers need access to quality internet. "For direct marketing farms needing customer connection [such as Polyface], the internet is literally the heartbeat of tomorrow's opportunities."

But Salatin criticized using the internet for precision agriculture, which he said was a euphemism for "adhere to diktats of the centralized industrial farming complex."

"No farmer who uses these platforms will get advice on how to have happy earthworms or how to make pigs healthy and happy enough to have immune systems that keep them well without vaccines and pharmaceuticals," Salatin said.

Moreover, quality internet could be provided through fiber-optic internet rather than wireless infrastructure, said Odette Wilkens, a technology attorney who is president and general counsel for Wired Broadband Inc., a nonprofit that advocates for hard-wired, high-speed internet.

Wilkens is lobbying Congress to amend the LAST ACRE Act to exclude wireless infrastructure and IoT devices from the grant program.

Wireless broadband emits radiofrequency radiation, which is known to harm the environment and non-human species, including honeybees.

Fiber, which is hard-wired, doesn't carry those harms — and it surpasses wireless in speed, performance and reliability, according to the National Institute for Science, Law and Public Policy.

**Funding should help farmers switch to regenerative ag**

Shiva and Leu — both founders of Regeneration International, a nonprofit that helped launch the worldwide regenerative agriculture movement — said public funding should go to helping farmers transition to regenerative agriculture rather than to promoting precision agriculture.

The regenerative agriculture paradigm, which includes "organic agriculture, agroecology, holistic management, agroforestry and other like-minded systems," is the "real future of agriculture," Leu said, adding:

> "These systems are profitable, environmentally and socially sound. We are growing by hundreds of thousands of new farmers worldwide. Our systems reduce and ultimately avoid industrial agriculture's toxic inputs of chemical fertilizers, synthetic pesticides, and GMOs [genetically modified organisms].
>
> "This saves farmers many thousands of dollars yearly — which goes into their profits, not the corporations.
>
> "And because we regenerate soil organic matter, our systems are more efficient at capturing and holding rainfall, which increases our resilience to the ever-increasing climate extremes."

Leu said the Rodale Institute's 40-year farming systems trials showed regenerative organic agriculture achieved an average of 30% higher yields during droughts compared with GMO- and pesticide-based industrial agriculture.

Fourth-generation farmer and regenerative farming expert Will Harris told The Defender his decades of farming experience taught him that monocultural production is "in opposition to the cycles of nature."

As The Defender previously reported, Harris successfully transitioned his farm, White Oak Pastures in Georgia, from an industrial to a regenerative farm that now employs 160 people.

He did this by embracing three principles that provide a robust model for other farms: "regenerative soil management, compassionate animal welfare and the re-enrichment of their impoverished rural community."

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**'Next-level control and enslavement of farmers'**

Precision agriculture methods are just the "next internal input" in a system that increases farmers' production costs and traps farmers in debt, according to Shiva.

First, farmers were told they must buy corporate-owned GMO seeds, pesticides and chemical fertilizers. Now, they are being "sold" Big Data, too, she said.

Shiva pointed out that the agrochemical giant Monsanto (now Bayer AG) in 2013 bought the digital agronomic company, Climate Corporation, for nearly $1 billion. In 2014, Bayer acquired the agrotech company Solum Inc.

Such corporate control is "leading to the next-level control and enslavement of farmers" and farms don't need these fabricated inputs that threaten biodiversity, she said.

But Cory Willness — CEO of Croptimistic, an agtech company that sells precision agriculture services such as soil mapping software — cautioned against lumping together all precision farming companies with agrochemical corporations.

His Canada-based company is privately held and has "no ties to any big ag companies," he said.

"We work directly with farmers," including regenerative farmers and organic farmers, he told The Defender, "so we couldn't care less about fertilizer, seed or chemical manufacturers."

Willness said precision farming is simply about "helping everyone apply the things that they're putting in their fields with seed and amendments … most effectively."

A farmer himself whose company internally pilots products before marketing them to other farmers, Willness said farmers choose whether they want to do precision agriculture "based on the value proposition it gives them."

Leu acknowledged that some small-scale precision agriculture companies don't have ties to larger corporations. But "as a commercial farmer with more than 50 years of experience on my farm and every arable continent, I can say that this technology is unnecessary."

**Precision ag fuels 'Food-as-Software'**

Precision agriculture feeds into the emerging "Food-as-Software" model that stands to cause additional environmental harm, said Shiva.

A spokesperson for RethinkX, the technology think tank that coined the term, told The Defender that Food-as-Software "is a completely new model of food production and consumption that arises from the disruption of the existing industrial animal agriculture industry by precision fermentation."

Precision fermentation uses genetically modified microorganisms grown in "bioreactors" to produce molecules, usually proteins. The spokesperson explained how the Food-as-Software model works:

> "By producing proteins (and other complex organic molecules) in bioreactors instead of animals, we can treat food much in the same way we treat software (hence Food-as-Software). Food will be designed using massive databases of molecules and tweaked for variations such as taste and texture based on consumer preferences or nutritional requirements.
>
> "Like software, food products will be continually improved through iteration as technology improves in both cost and capability and as these food component databases grow.
>
> "Integration with information technology and the internet means that improvements in production methods and/or ingredients can be downloaded and incorporated almost instantaneously, allowing production to be fully distributed and decentralized — just like software."

The spokesperson praised precision agriculture because it will "bring us closer to a Food-as-Software model."

Precision fermentation relies on the GMOs being fed carbon, mostly "in the form of dextrose (glucose made from corn), so improvements to the efficiency and economics of crop farming thanks to precision agriculture will help to drive down the cost of inputs and therefore the cost of precision fermentation."

Shiva called this shift to a "Food-as-Software" model a "dystopia that the corporations and billionaires are trying to impose on our food system."

Food made via precision fermentation — "Lab Food," Shiva called it — requires "huge demands for feedstock and reduces food to raw materials of carbohydrates and proteins."

"Contrary to the false claim that this is a solution to climate change … it will increase the demand for feedstock 5 times, and carbon emissions 25 times," Shiva said.

**'Something is always left out of the data'**

Author Charles Eisenstein, who spoke with The Defender, also criticized precision agriculture, noting it draws from a paradigm that defines progress as improving our capacity "to exert control":

> "It sees farming in scientific-industrial terms, as a matter of quantifiable inputs and outputs. It reduces life to a series of quantitative processes. For those who accept this conception of progress, precision agriculture is an unambiguous improvement. … In the long run, though, it will suffer the same basic problem that afflicts chemical-industrial agriculture, and indeed any attempt to reduce life to chemistry and data.
>
> "Something is always left out of the data. Some key process is outside our map of the chemical pathways. Our interventions have unpredictable nonlinear effects. We attempt to replace the complexity of life, the complexity of ecology, with a set of controlled processes, and this simplification always removes something essential."

The result is "depletion of soil and its biodiversity, harm to pollinators, depletion of food components like micronutrients and bioflavonoids that are invisible in our measures of yield, and even depression in the farmers when they lose touch with the living aspect of the food they grow," Eisenstein said.

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Lucy Reese, a mental health counselor and former organic farm manager, agreed. "If precision and technology were going to solve our problems, we would have arrived in utopia by now," she told The Defender.

Both Reese and Eisenstein said it's time to move in a different direction by holding the soil and farm ecosystem as "alive," and valuing its complexity and diversity as crucial to health.

Reese — who assists clients in recovering from trauma, eating disorders, anxiety and depression — said the health of the land and the mental health of people are related. She said:

> "The continued pursuit of flawless optimization and control over naturally nonlinear ecosystems is akin to chronic skin picking (excoriation). As we root out imperfections, we dig deeper into the sensitive tissues of our land, causing damage and disruptions.
>
> "This in turn increases the desire to root out the disruption, and the cycle continues. The solution is to tolerate the seeming chaos of our natural land and bodies as they heal.
>
> "Even as overwhelming urges to control wash over us, we can choose kindness and trust over force. The choice to slow the cycle will not be easy, but it will be right."

**Change takes time**

In the meantime, it's important to not "vilify" the farmers who still practice industrial agriculture methods or are adopting precision farming methods, Willness said:

> "I often say that when I went to university … 25 years ago, they were teaching us all the things that we needed to do to produce food, to feed the world. And guess what? We went and did those things and now people are changing the target again.
>
> "Now they're saying, 'This isn't the way to do it. Now you got to do it a different way.' Well, it takes decades for people to change what they do. … Farmers are just ordinary people like you and I. They're not evil. They're just doing what they do."

Willness said he believes the world is indeed "moving in a different direction" — and that this shift is primarily driven by consumers' purchasing power.

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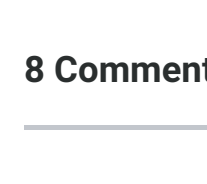

**Suzanne Burdick, Ph.D.**

Suzanne Burdick, Ph.D., is a reporter and researcher for The Defender based in Fairfield, Iowa.

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**Beatrice**
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Big Tech will always perceive all living creatures and biological systems as quantifiable (lucrative) inputs and outputs. This is why they don't believe in G-d. G-d is not a quantifiable input or output that will surrender control to them and generate profits. Big tech needs to go outside, notice the Divinely created nature around them, get a real life and a real job and quit trying to play G-d.
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**holisticpoet**
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I will personally always be a regenerative farmer who adds fertility to the soil on a regular basis. I will never apply chemicals to the soil as this always degenerates soil by killing microbes, which I believe to be the key to soil health, plant health, and plant nutrition.
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6 days ago
You need to speak with Dr. Zach Bush, MD, Farmers Footprint, and other of his organizations concerning these things. He was teaching regenerative agriculture years ago. You need to speak with him about it also.
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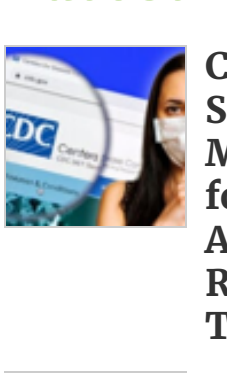

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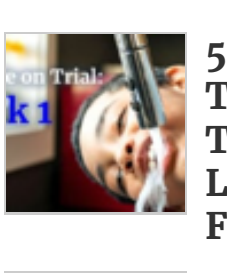

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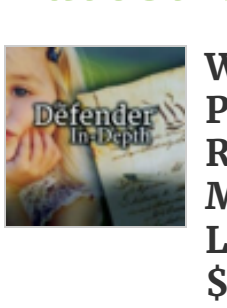

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